OCCUPATIONAL INJURIES AND DISEASES IN ALBERTA

Oilfield Maintenance and Construction 1995 to 1999

Upstream Oil and Gas
Sub-Sector #2

Alberta
HUMAN RESOURCES
AND EMPLOYMENT

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Performance and Applied Research
Alberta Human Resources
and Employment
2nd Floor
10808-99 Avenue
Edmonton, Alberta
T5K 0G5

Phone: (780) 427 - 8531
Fax: (780) 422 - 5070
E-Mail Address:
commshare@lab.gov.ab.ca
Alberta Human Resources
and Employment website:
http://www.gov.ab.ca/hre

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1. Introduction

The Mission of Alberta Human Resources and Employment

One of the missions of Alberta Human Resources and Employment is to work in partnership with Albertans to promote safe and healthy workplace, a quality working life and comprehensive safety systems. To this end, Alberta Human Resources and Employment recognises that monitoring health and safety in Alberta will help to ensure primary workplace health and safety concerns are actively managed and prioritised, and resources directed where most needed.

This report summarises the lost-time injuries and disease descriptions, characteristics of the injured worker and the risk of injury to workers in Alberta's upstream oil and gas industries for the years 1995 to 1999. Cost of the injuries and revenue in terms of total premiums paid by employers. Finally, a summary of occupational fatalities accepted by the WCB for compensation and brief descriptions of fatalities investigated by Occupation Health and Safety are also provided.

The purpose of this report is to provide government, employers, workers and health and safety officers in upstream oil and gas industries with information about the industry key health and safety issues.

Description of Upstream Oil and Gas Industries

The upstream oil and gas industries can be subdivided into the following sub-sectors.
Exploration, Oilfield Maintenance and Construction, Well Servicing with Service Rigs and Power Swivels, Drilling of Oil and Gas Wells, Oilfield Downhole and Other Services, Tar Sands, Petroleum Producers, and Oilfield Trucking Services.

The next section gives the descriptions of the Oilfield Maintenance and Construction sub-sector.

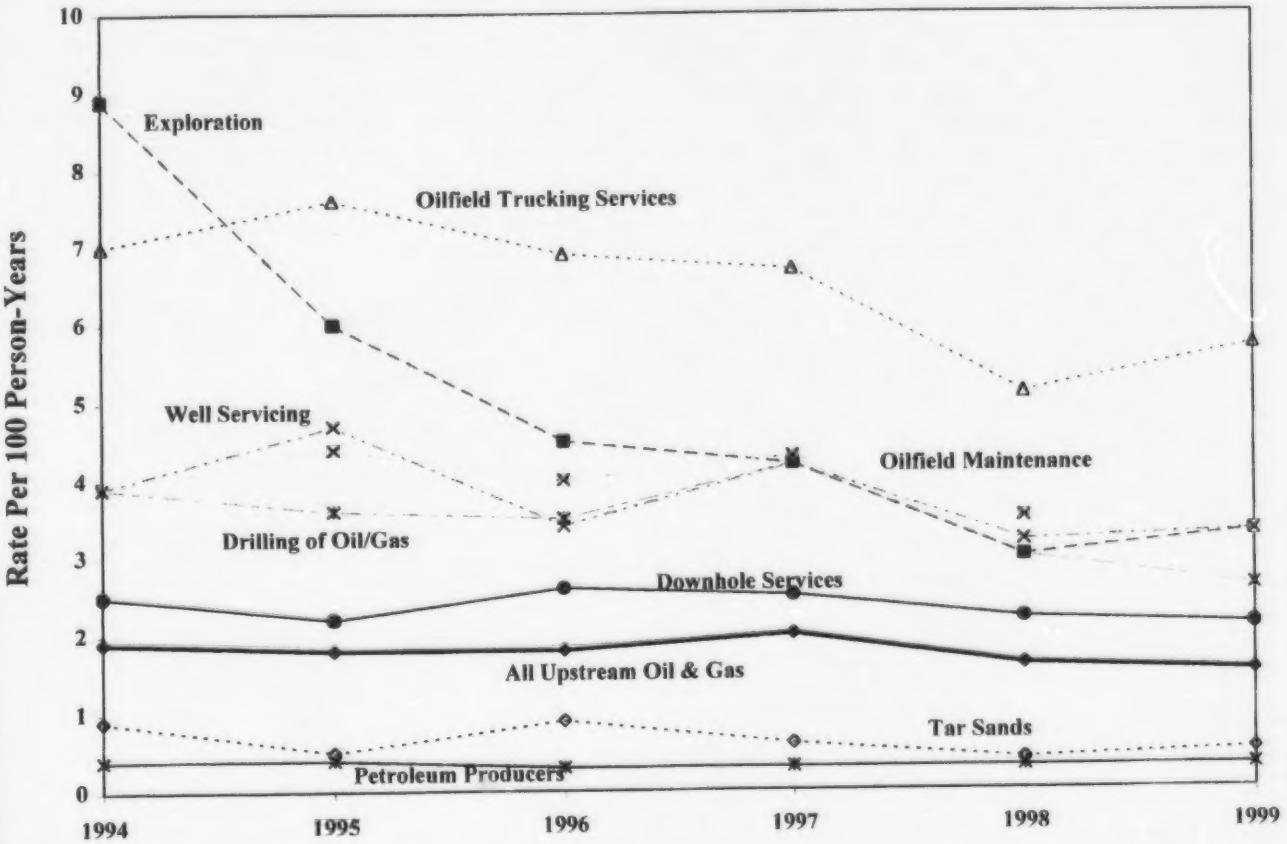
2. Sub-Sector Description

Sub-Sector # 2: Oilfield Maintenance & Construction

Oilfield Construction and/or Maintenance (Upstream of Processing Plants)(Industry # 06304)
This classification describes general contracting business that undertake turn-key construction and maintenance projects at facilities and lease sites upstream of gas plants.

Businesses may construct oil and gas wells, battery tanks, and compressor stations upstream of the processing facility. Construction activities may extend into ties-ins, installing/removing pump-jacks, dehydrators, and secondary construction activities of installing fences and gates. Maintenance activities may include painting, welding, pipefitting, cleaning oil spills, clearing a lease road, and maintaining the grounds in and around the site.

Lost-Time Claim Rates
Upstream Oil & Gas Subsectors
Alberta: 1994-1999



3. Lost-Time Claim Rates and Duration Rates

06304-Oilfield Maintenance and Construction

Year	# of Accounts	Cost	Person Years	Days Lost	Duration Rate	LTCs	LTC Rate
1995	760	$847,724	3,495	5,962	171	155	4.4
1996	778	$1,164,171	4,019	5,874	146	161	4.0
1997	858	$1,871,160	5,264	8,100	154	225	4.3
1998	901	$903,554	4,839	6,575	136	168	3.5
1999	920	$527,283	4,193	6,577	157	138	3.3

3.1 LTC Rates by Size of Employer: 1999

Size of Employer	# of Accounts	LTCs	Person - Years	LTC Rate
A: 0< PY <=1	450	7	229	3.1
B: 1 < PYs < 5	255	18	585	3.1
C: 5 <= PYs < 10	62	21	429	4.9
D: 10 <= PYs < 20	52	26	723	3.6
E: 20 <= PYs < 40	20	12	542	2.2
F: 40 <= PYs < 100	17	43	1,037	4.1
G: PYs >=100	4	8	649	1.2
H: Invalid	60	3	0	N/A
Total	920	138	4,193	3.3

4. Analysis of the Lost-Time Claims

4.1 Nature of Injury

LOST-TIME CLAIMS ALBERTA: 1995 TO 1999	OCCURRENCE YEAR					Total	
	1995	1996	1997	1998	1999	Number	Percent
SPRAIN, STRAIN, TEARS	47	50	93	47	42	279	32.9
FRACTURE, DISLOCATION	25	30	51	43	33	182	21.5
SURFACE WOUNDS, BRUISES	28	29	27	28	17	129	15.2
OPEN WOUNDS	19	16	20	12	11	78	9.2
OTHER TRAUMATIC INJURIES/DISEASE	9	10	9	17	18	63	7.4
SYSTEMIC DISEASES,DISORDERS	12	8	12	7	10	49	5.8
BURNS	8	7	4	9	2	30	3.5
MULTIPLE DISEASE, DISORDERS	.	2	1	1	.	4	0.5
SYMPTOMS, SIGN/ILL-DEFINED CONDITIONS	.	.	1	.	.	1	0.1
NATURE-UNKNOWN	7	9	7	4	5	32	3.8
Total	155	161	225	168	138	847	100.0

4.2 Duration of Disability

LOST-TIME CLAIMS ALBERTA: 1995 TO 1999	OCCURRENCE YEAR					Total	
	1995	1996	1997	1998	1999	Number	Percent
A: 01 Day	10	21	19	13	9	72	8.5
B: 02 Days	15	8	15	11	7	56	6.6
C: 03 - 05 Days	16	19	47	24	13	119	14.0
D: 06 - 10 Days	20	23	28	21	15	107	12.6
E: 11 - 20 Days	26	22	25	24	20	117	13.8
F: 21 - 30 Days	16	5	13	16	13	63	7.4
G: 31 Days OR More	46	58	73	53	58	288	34.0
H: Unspecified	6	5	5	6	3	25	3.0
Total	155	161	225	168	138	847	100.0

4.3 Type of Event/Exposure

LOST-TIME CLAIMS ALBERTA: 1995 TO 1999	OCCURRENCE YEAR					Total	
	1995	1996	1997	1998	1999	Number	Percent
STRUCK BY OBJECTS	41	26	49	43	25	184	21.7
OVEREXERTION	24	35	47	28	32	166	19.6
CAUGHT IN OBJECTS	20	14	26	18	12	90	10.6
BODILY REACTION	13	22	15	17	10	77	9.1
FALL TO LOWER LEVEL	7	8	14	15	7	51	6.0
EXPOSURE TO HARMFUL SUBSTANCE	15	10	9	11	3	48	5.7
TRANSPORTATION ACCIDENTS	3	10	17	7	10	47	5.5
FALL ON SAME LEVEL	7	8	12	6	10	43	5.1
RUBBED OR ABRADED	9	8	6	3	5	31	3.7
STRUCK AGAINST OBJECTS	5	3	9	7	4	28	3.3
OTHER FALLS	.	3	9	2	2	16	1.9
FIRES AND EXPLOSIONS	1	2	1	.	1	5	0.6
REPETITIVE MOTIONS	.	.	1	1	3	5	0.6
OTHER BODILY REACTION/EXERTION	.	.	.	1	2	3	0.4
OTHER CONTACT WITH OBJECT/EQUIP	.	.	2	.	.	2	0.2
UNKNOWN	10	12	8	9	12	51	6.0
Total	155	161	225	168	138	847	100.0

4.4 Part of Body Injured

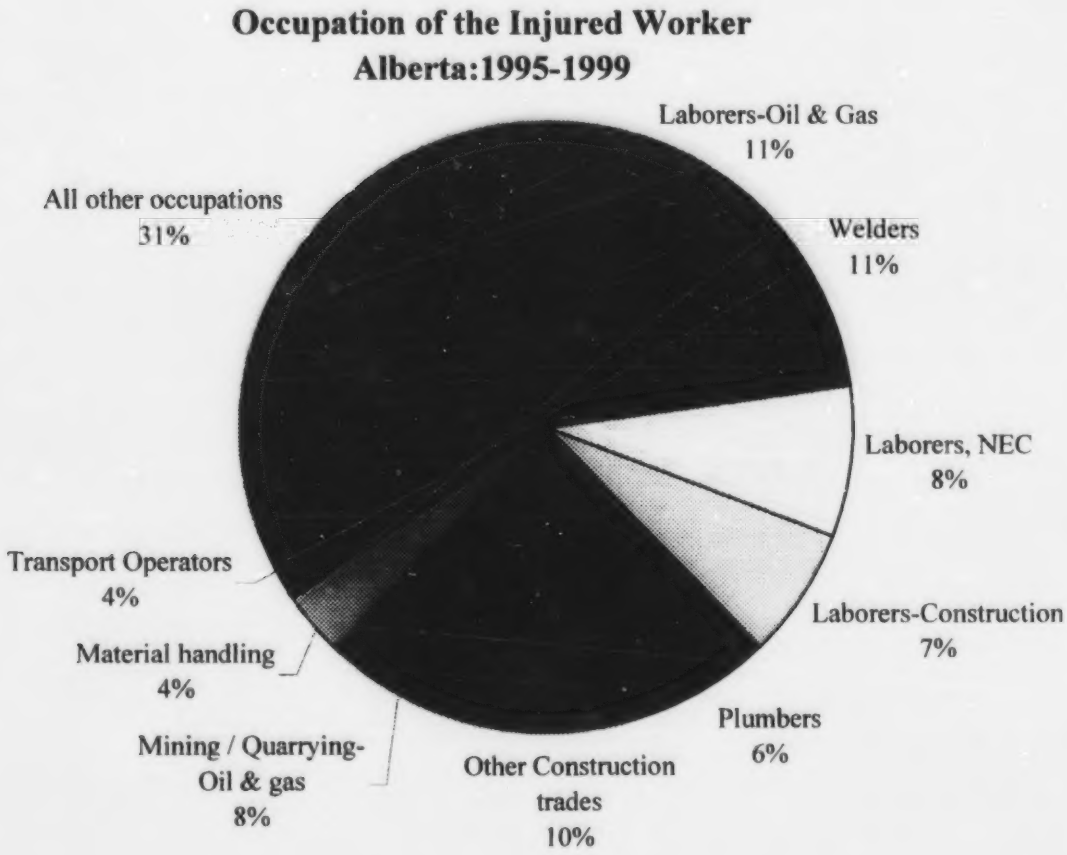
LOST-TIME CLAIMS ALBERTA: 1995 TO 1999	OCCURRENCE YEAR					Total	
	1995	1996	1997	1998	1999	Number	Percent
BACK	26	40	56	32	35	189	22.3
OTHER TRUNK	12	14	28	21	25	100	11.8
FINGER(S)	19	9	27	26	14	95	11.2
LEG(S)	16	21	26	17	14	94	11.1
ANKLE(S) & FOOT(FEET)-NOT TOES	17	22	19	19	16	93	11.0
WRIST(S)/HAND(S)	12	15	16	19	7	69	8.1
OTHER HEAD	14	10	18	8	4	54	6.4
EYE(S)	14	12	11	8	5	50	5.9
OTHER UPPER EXTREMITIES	8	6	5	8	8	35	4.1
NECK	5	4	9	4	.	22	2.6
MULTIPLE BODY PARTS	4	5	4	3	6	22	2.6
OTHER LOWER EXTREMITIES	5	1	5	2	4	17	2.0
BODY SYSTEMS	3	.	.	1	.	4	0.5
UNKNOWN	.	2	1	.	.	3	0.4
Total	155	161	225	168	138	847	100.0

4.5 Source of Injury

LOST-TIME CLAIMS ALBERTA: 1995 TO 1999	OCCURRENCE YEAR					Total	
	1995	1996	1997	1998	1999	Number	Percent
PARTS AND MATERIALS	44	43	72	35	38	232	27.4
STRUCTURES/SURFACES	13	18	29	20	16	96	11.3
PERSONS-INJURED WORKER	13	21	16	19	12	81	9.6
VEHICLES	11	9	23	9	15	67	7.9
HANDTOOLS-UNPOWERED	9	8	11	20	8	56	6.6
MACHINERY	8	10	16	10	5	49	5.8
OTHER SOURCES	11	16	4	8	6	45	5.3
CONTAINERS	2	4	5	7	9	27	3.2
HANDTOOLS-POWERED	3	7	5	2	3	20	2.4
OTHER TOOLS/EQUIPMENTS	.	1	9	4	2	16	1.9
MINERALS-METALS/NONMETALLIC	4	2	3	3	2	14	1.7
CHEMICAL/CHEMICAL PRODUCTS	3	1	3	2	1	10	1.2
OTHER PLANTS/ANIMALS/MINERALS	1	.	1	3	2	7	0.8
FURNITURE AND FIXTURES	.	.	4	1	1	6	0.7
PERSONS-OTHER THAN INJURED WORKER	1	.	.	1	.	2	0.2
UNKNOWN	32	21	24	24	18	119	14.0
Total	155	161	225	168	138	847	100.0

5. Characteristics of the Injured Worker

5.1 Occupation of the Injured Worker



5.2 Age of injured Worker

LOST-TIME CLAIMS ALBERTA: 1995 TO 1999	OCCURRENCE YEAR					Total	
	1995	1996	1997	1998	1999	Number	Percent
A: 15 - 19 Years	17	12	28	19	11	87	10.3
B: 20 - 24 Years	38	28	52	40	33	191	22.6
C: 25 - 34 Years	48	59	64	50	35	256	30.2
D: 35 - 44 Years	31	41	47	33	31	183	21.6
E: 45 - 54 Years	15	15	21	19	19	89	10.5
F: 55+ Years	3	6	10	7	8	34	4.0
G: Unspecified	3	.	3	.	1	7	0.8
Total	155	161	225	168	138	847	100.0

5.3 Length of Time Employed

LOST-TIME CLAIMS ALBERTA: 1995 TO 1999	OCCURRENCE YEAR					Total	
	1995	1996	1997	1998	1999	Number	Percent
A: LESS THAN 1 MONTH	22	21	41	24	20	128	15.1
B: 1 MONTH TO < 6 MONTHS	51	34	60	34	34	213	25.1
C: 6 MONTHS TO < 1 YEAR	19	14	23	17	13	86	10.2
D: 1 YEAR OR MORE	38	50	64	56	43	251	29.6
E: TIME UNSPECIFIED	25	42	37	37	28	169	20.0
Total	155	161	225	168	138	847	100.0

5.4 Gender of Injured Worker

LOST-TIME CLAIMS ALBERTA: 1995 TO 1999	OCCURRENCE YEAR					Total	
	1995	1996	1997	1998	1999	Number	Percent
MALES	149	155	211	159	131	805	95.0
FEMALES	4	4	7	7	3	25	3.0
UNSPECIFIED	2	2	7	2	4	17	2.0
Total	155	161	225	168	138	847	100.0

6. Cost of Claims and Employer Premiums

Sub-Sector 2-Oilfield Maintenance & Construction

	OCCURRENCE YEAR				
	1995	**1996**	**1997**	**1998**	**1999**
TRANSACTION YEAR					
1995	$655,321				
1996	$419,053	$1,120,990			
1997	$49,814	$340,048	$1,104,238		
1998	$55,457	$389,139	$948,882	$773,873	
1999	-$15,033	$275,000	$896,602	$575,792	$468,902
Total Cost	$1,164,613	$2,125,176	$2,949,722	$1,349,665	$468,902
Total Premiums	$4,459,688	$4,407,953	$5,464,207	$4,236,636	$2,667,639

The above claim cost and employer premiums are for the five-year period 1995 through 1999. The data is as at July 5, 2000.

The cost of claim amount reflects only paid cost on claims that have occurred in the five-year period. The claim costs are tracked by occurrence year and the year that the costs were transacted.

The premiums are the total of all premiums paid by employers in each year.

7. Occupational Fatalities

An occupational fatality is the death of a worker that results from a work-related incident or exposure. Alberta Human Resources and Employment classifies occupational fatalities into three general types: motor vehicle incident, workplace incident and occupational diseases. Each is described in detail below.

Motor Vehicle Incident

Motor vehicle incidents typically involve highway vehicles operating on public roads in which the fatally injured worker was either the driver or a passenger. This category also includes fatalities involving aircraft crashes, train crashes, helicopter crashes, etc.

Workplace Incident

Fatal workplace incidents consist of cases in which the worker dies at a work site, or as a result of injuries sustained at a work site. It is this type of fatality that Alberta Human Resources and Employment may be responsible for investigating.

Occupational Diseases

Occupational disease fatalities consist mostly of recognized occupational disease, that is, disease known to be primarily or exclusively work-related (e.g. asbestosis, black lung disease). Occupational diseases are frequently diagnosed many years after the initial or crucial exposure to the toxic substance, and in such cases it is very difficult to determine when the fatal exposure occurred. Thus, the occupational disease category should not be interpreted to reflect present work site hazardous conditions or exposures.

Each year the Workers' Compensation Board (WCB) accepts some occupational fatality claims for compensation. Occupational fatality claims that were accepted in a particular year may include fatalities from prior years.

Description of Oilfield Maintenance and Construction Workplace Fatalities Accepted by the WCB

Year	Occupational Disease		Motor Vehicle incident		Workplace Incident		Total	
	N	%	N	%	N	%	N	%
1995	0	0.0	1	100.0	0	0.0	1	100
1996	0	0.0	3	100.0	0	0.0	3	100
1997	0	0.0	1	50.0	1	50.0	2	100
1998	1	33.3	1	33.3	1	33.3	3	100
1999	0	0	0	0	0	0	0	0
Total	1	11.1	6	66.7	2	22.2	9	100

8. OHS Investigated Occupational Fatalities: 1995 to 1999

YEAR:	1998	FILE:	0891
OCCUPATION:	Apprentice Welder	AGE:	24
INDUSTRY:	Oil Field Construction and/or Maintenance (Upstream of Processing Plants)		
EXPERIENCE:	1.5 years		

DESCRIPTION: A three person crew was in the process of cutting steel pilings for the installation of an above ground pipeline at the Primrose Lake construction site. The piles had been driven into place in pairs. The piles at the incident scene were long, so a backhoe was required to hold the piles while they were being cut. One of the poles had been cut and pulled down. They were setting up to cut the second pile when the welder appeared in front of the piling just as the backhoe bucket was swinging back to hold the pile. The welder was hit on the right side of his head with the bucket of the backhoe resulting in fatal injures.

Appendix A: Terms, Definitions, and Formulas

Lost-Time Claim

A lost-time claim (LTC) is a claim for an occupational injury or disease which disables the worker beyond the day of injury. Included are claims for which wages compensation are paid, permanent disability claims, fatalities, and cases in which the injured worker is assigned light duties or other modified work.

Person-Years

Person-year estimates are calculated from wage and payroll data provided by account holders to the WCB. Alberta Labour uses these data to estimate. An average industry wage, and uses the average industry wage and employer payroll data to estimate person-years foe each employer and each industry. One person-year ie equivalent to one full-time worker working for one year, and can be assumed to equal 2,000 hours worked.

LTC Rate

The lost-time claim (LTC) rate is calculated by dividing the number of lost-time claims by the person-year estimate, and multiplying the result by 100. The LTC rate represent the probability or risk of disabling injury or disease to a worker during a period of one year=s work. Comparisons of LTC rates between industries, or between years, can be used to indicate increases, decreases, or differences in this risk.

$$\text{LTC Rate} = \frac{\text{Number of LTCs X 100}}{\text{Estimated Person-years}}$$

Duration (Days Lost)

The duration of disability is the number of days following the injury or disease for which the worker was disabled, and unable to perform normal work duties. This information is obtained for this report from data on compensation days paid on each claim from WCB. Alberta Labour obtains these data on March 31 of the year following the claim year, and does not update the information, even though many injured workers continue to be disabled beyond this date. As a result, the duration information reported here underestimates the true impact of lost-time injury and disease.

Duration Rate

The duration rate is calculated by dividing the number of work days lost (disability days) by the person-year estimate, and multiplying by 100. The result is expressed as Adays lost per 100 person-years worked@, and indicates, in part, the economic impact of occupational injury and disease. Duration rates are not recommended as reliable indicators of full economic cost. In addition, readers are warned that duration rates are highly unstable when based on only a few lost-time claims; it is recommended that the duration rate not be calculated based upon fewer than 30 lost-time claims.

$$\text{Duration Rate} = \frac{\text{Disability Days X 100}}{\text{Estimated Person-Years}}$$

WCB Accepted Fatality

An occupational fatality is the death of a worker which result from a work-related incident or exposure and which has been accepted by the WCB for compensation. A fatality is counted in the year it is accepted.

NEC

Means "Not Elsewhere Classified"

UNS

Means "Unspecified"

Appendix B: Upstream Oil and Gas 1999 Industry Codes

Sub-Sector 1: **Exploration**
Industries: 09200~Seismic Geophysical/Mineral Exploration
09201~Shot Hole Drilling

Sub-Sector 2: **Oilfield Maintenance and Construction**
Industries: 06304~Oilfield Construction and/or Maintenance

Sub-Sector 3: **Well Servicing With Service Rigs**
Industries: 09903~Well servicing with Service Rigs including Power Swivels

Sub-Sector 4: **Drilling of Oil and gas Wells**
Industries: 09600~Drilling of Oil & Gas Wells

Sub-Sector 5: **Downhole & Other Oilfield Services**
Industries 06305~Field Production Operators
06306~Vacuum Removal of Waste
09900~Mud Logging
09902~Pressure Cleaning Services
09904~Rathole Drilling and Rig Anchoring
09911~Oilfield Downhole Services
09915~Well Casing Services
09921~Servicing Christmas Trees On Oil Wells
09927~Liquid Waste Treatment & Disposal

Sub-Sector 6: **Tar Sands**
Industries: 06600~Mining & Processing of Bituminous Sand
06601~Research/Development, Oil Sands and Heavy Oil Recovery

Sub-Sector 7: **Oil & Gas Exploration/Development**
Industries: 06300~Oil and Gas Exploration & Development-Upstream Operations

Sub-Sector 8: **Oilfield Trucking Services**
Industries: 50720~Oilfield Trucking Services